

REMARKS

A total of 26 claims remain in the present application. The foregoing amendments are presented in response to the Office Action mailed February 27, 2007, wherefore reconsideration is respectfully requested. By way of the foregoing amendments, claims 1, 10-11, 14 and 22-24 have been amended to more precisely define the subject matter of the present invention. In preparing the above-noted amendments, careful attention has been paid to ensure that no new subject matter has been introduced.

Referring now to the text of the Office Action,:

- paragraph 55 has been objected to;
- claims 1-23 have been rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter;
- claims 10 and 22-26 stand rejected under 35 U.S.C. § 112, second paragraph;
- claims 1-4, 6, 10-11, 16-18, 22 and 24-25 stand rejected under 35 U.S.C. § 103(a), as being unpatentable over the teaching of United States Patent Application Publication No. 2002/0116187 (Erten);
- claims 5, 7-9 and 26 stand rejected under 35 U.S.C. § 103(a), as being unpatentable over the teaching of Erten in view of Applicant's admitted prior art; and
- claims 12-13 stand rejected under 35 U.S.C. § 103(a), as being unpatentable over the teaching of Erten in view of United States Patent No. 6,707,910 (Valve et al.).

The Examiners various objections to the specification and claims are believed to be traversed by way of the above-noted amendments, and further in view of the following discussion.

Objections to the Specification

Paragraph 55 of the specification has been amended to properly describe that a piece-wise function is used to estimate the parameter 's', rather than a piece-wise linear

function. In addition, the index 'i' has been added to variables v , σ^2 and a , so as to ensure consistency with the rest of the specification.

Rejections under 35 U.S.C. § 101

Section 3 of the Detailed Action asserts that claim 1 is directed solely to an abstract idea, and thus falls within 35 U.S.C. § 101 Judicial Exceptions. Applicant respectfully disagrees. Originally defined claim 1 defined a limitation “using the respective parameters to evaluate a composite Gaussian and signal distribution function to provide a measure of noise and signal contributions to the component” Applicant submits that the method steps recited in the claim are not merely an abstract idea, but rather define a computation process by which a received noise contaminated signal is analysed to provide a measure of noise and signal contributions to [each] component of the signal. It is submitted that such measures are a useful, tangible and concrete result, which can advantageously be used in numerous practical applications. As such, it is believed that claim 1, and its dependencies, do not fall under the Judicial Exceptions of 35 U.S.C. § 101, and thus define statutory subject matter.

Notwithstanding the foregoing, claim 1 has been amended to define a further step of attenuating the component in proportion to the estimated noise contribution. It is believed that this further step also provides a useful, tangible and concrete result, which can advantageously be used in numerous practical applications.

Rejections under 35 U.S.C. § 112

Claims 10 and 22-24 have been amended to clarify the wording of the claims, and further to ensure proper antecedent support for each of the claim limitations.

With specific reference to claim 10, Paragraphs 35-37 of the specification describe the operation of the voice activity detector (VAD) 16 and the component distribution parameter reviser 14. Thus, “The VAD outputs a decision regarding the components of a frame to the clean speech estimator 18, and outputs a prediction that the next frame is noise or noise-contaminated speech to the component distribution parameter reviser 14. The prediction enables the component distribution parameter reviser 14 to select the parameters to be updated for the respective components.” [para. 0037] Thus it will be seen that a value computed during processing of a frame (ie, the prediction generated by the VAD 16) is used to select the parameters that are updated for the next frame, as defined in claim 10. Thus it

is believed that claim 10 as now amended fully satisfies the requirements of 35 U.S.C. § 112.

Rejections under 35 U.S.C. § 103(a)

United States Patent Application Publication No. 2002/0116187 (Erten) teaches a method of speech detection, in the presence of noise. At FIGs. 9 and 10, and at paragraph 110, Erten describes that speech generally follows a Laplacian distribution, while noise follows a Gaussian or super-Gaussian distribution. Further, Erten teaches that speech has a lower variance, and thus the variance of an extracted signal can be used to detect the presence of speech.

However, Erten does not teach or fairly suggest that respective parameters (e.g. the variance) of the Laplacian or Gaussian distributions are recursively updated, based on the results of processing each successive frame, as is required by the present invention. The known prior art fails to provide the missing teaching.

In light of the foregoing, it is respectfully submitted that the presently claimed invention is clearly distinguishable over the teaching of the cited references, taken alone or in any combination. Thus it is believed that the present application is in condition for allowance, and early action in that respect is courteously solicited.

If any extension of time under 37 C.F.R. § 1.136 is required to obtain entry of this response, such extension is hereby respectfully requested. If there are any fees due under 37 C.F.R. §§ 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. § 1.136, please charge such fees to our Deposit Account No. 19-5113.

Respectfully submitted,

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